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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,371	07/20/2001	John E. Seem	510554.95814	2802

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EXAMINER
WEST, JEFFREY R

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 04/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/910,371	Applicant(s) SEEM, JOHN E.	
	Examiner Jeffrey R. West	Art Unit 2857	

-- The MAILING DATE of this communication appears on the c ver sheet with the correspondence address --

Peri d for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 July 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "62" (Figure 4). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,990,893 to Kiluk in view of Carey et al., "Resistance and Test-Based Outlier Rejection: Effects on Gaussian One- and Two-Sample Inference."

Kiluk discloses a method in an alarm system, including recording of energy consumption, such as electricity, gas or water utility consumption (column 3, lines 4-10), by repeatedly measuring a level of use of a utility to produce a plurality of utility measurements (column 2, lines 48-51 and Figure 2). Kiluk then discloses comparing a current measurement to a corresponding reference value at the same

point in time. It is then determined whether the current measurement varies significantly (i.e. is an outlier) compared to the value and, if so determined, the severity of an abnormality in utility consumption is identified (i.e. evaluation of system performance) (column 2, line 57 to column 3, line 3). Although, Kiluk doesn't specifically disclose performing separate comparisons, Kiluk does provide the functionally equivalent method for comparing the measurement values to the reference values with groups defined by time periods of normally similar usage (column 3, lines 24-27), groups of days of normally similar usage, and groups dependent on changes in living habits (column 3, lines 46-61).

Although Kiluk teaches comparing the current measurements to reference values in order to determine significantly outlying data values, Kiluk doesn't provide a corresponding statistical method for determining what values are significantly outlying, specifically by using a GESD.

Carey teaches a method for outlier detection through the use of the Generalized Extreme Studentized Deviate (GESD) statistical procedure (page 326, column 2). Carey also teaches the definition of the GESD procedure comprising determining how many standard deviations a given outlier is from an average of the samples using the equation $R1 = \max |X_i - \mathbf{X}| / s$ where X_i is the amplitude of the i-th outlier, $\mathbf{X}$ is the average (i.e. mean) value of a plurality of samples, and s is the standard deviation. Carey also teaches determining the critical values using a common student t-distribution equation and determining the percentile using the equation $p = 1 - [(\alpha / 2) / (n - l)]$ (page 329). Carey also teaches determining an outlier, removing

each outlier, and repeating the determining and removing steps until all outliers have been identified and removed (i.e. iterative peeling) (page 321, column 1).

Although not specifically disclosed, in order to used the equations previously described, it is considered inherent that the value X_i, corresponding to the current outlier, the value of **X** (i.e. mean), and the value of s (i.e. standard deviation) must all be previously determined since the equations require these initial values.

It would have been obvious to one having ordinary skill in the art to modify the invention of Kiluk to include determining what values are significantly outlying using a GESD, as taught by Carey, because the combination would have provided a method necessary in the invetion of Kiluk to discriminate between small changes in measurements and significant deviations which, as suggested by Carey, is a well known, accurate, method that explicitly follows error-based standardization and can be calibrated to possess any desired mislabeling rate (page 321, column 2).

4. Claims 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiluk in view of Carey et al. and further in view of Sematech, "The Engineers Statistical Internet (ESI) Handbook: Grubbs' Test for Outliers."

As noted above, the invention of Kiluk and Carey teaches all the features of the claimed invention except for specifying what percent of a critical value indicates the occurrence of an outlier.

Sematech teaches the well-known definition of the Grubbs' statistic (also known as the GESD) for determining the largest absolute deviation from a sample mean in

units of the sample standard deviation. Sematech also teaches determining an outlier if it exists outside the critical regions wherein the critical regions are defined as having limits calculated as either 100α or 95α percent of the critical values.

It would have been obvious to one having ordinary skill in the art to modify the invention of Kiluk and Carey to include specifying that the confidence level be at 100% of the critical value, as taught by Sematech, because the combination would have provided a necessary value to indicate an outlier occurrence that would result in a high level of confidence. Further, although the Applicant describes the use of a 100% value in the specification, Applicant fails to provide the criticality for choosing this value. Therefore this feature is considered an engineering design choice and it would have been obvious to one having ordinary skill in the art to choose whatever confidence level desired in a specific implementation.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kiluk in view of Carey et al. and Sematech and further in view of U.S. Patent No. 5,555,195 to Jensen et al.

As noted above, the invention of Kiluk and Carey teaches all the features of the claimed invention except for specifying that maintenance be performed on the system in response to the examination of one or more of the outliers.

Jensen teaches a controller for use in an environment control network capable of storing diagnostic information comprising a processor for receiving a sensed parameter value, providing a summary value related to the parameter value, and

storing the summary value in memory (column 2, lines 54-67). Jensen also teaches sending summary data indicative of the lifetime operation of the device being monitored to an operator for review (column 3, lines 16-23) wherein the operator views outliers in the data as devices requiring maintenance (column 9, lines 57-65).

It would have been obvious to one having ordinary skill in the art to modify the invention of Kiluk, Carey, and Sematech to include specifying that maintenance be performed on the system in response to the examination of one or more of the outlier, as taught by Jensen, because the invention of Kiluk, Carey, and Sematech teaches alarming the user to an abnormality when an outlier value is detected and, as suggested by Jensen, the combination would have provided a method for correcting the occurrence of errors and therefore restored proper operation (column 9, lines 57-65).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U.S. Patent Application Publication No. 2003/0061249 to Ramaswamy et al. teaches a method for identifying abnormal usage patterns through the identification of outliers.

U.S. Patent No. 6,424,929 to Dawes teaches a method for detecting outlier measures of activity.

U.S. Patent Application Publication No. 2001/0020219 to Kishlock et al. teaches an energy efficiency measuring system and reporting methods including determining statistical deviations in normal usage.

U.S. Patent Application Publication No. 2003/0014205 to Tabor teaches a method and apparatus for semiconductor testing including determining outliers and examining the outliers to identify potentially unreliable components.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

jrw
April 6, 2003